THE RELATIONSHIP BETWEEN LOW CARBON POLICY AND LOW CARBON EMPLOYEE BEHAVIOR

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A capstone submitted to Johns Hopkins University in conformity with the requirements for the degree of Master of Science in Energy Policy and Climate

Baltimore, Maryland
May 2020

Executive Summary

There are many challenges in the implementation process of developing robust policies surrounding sustainability initiatives in the workplace. Managers must consider various interventions that focus on employee costs vs. benefits. Taking this approach may help to understand the "attitude-behavior" gap that is often found in sustainability contexts. This notion stems from the research that has found individuals who support pro-environmental behaviors but who do not ultimately follow through with eco-conscious actions (White, et al., 2019). Until more recent years, there has not been much research done regarding the behavior gap attitude in the workplace. However, there is literature that provides understandings on green consumerism as it applies to marketing and the purchasing of "green products". While the sole action of buying green products is not the only practice that applies to this study, understanding why this phenomenon occurs in environmental consumerism can serve as a guide for the psychology behind environmentally responsible behaviors. In a similar study published by Shruti Gupta and Denise T. Ogden titled: The Attitude-Behavior Gap in environmental Consumerism, two moderators are discussed: level of consumerism and involvement and perceived consumer effectiveness as predictors of this behavior gap (Gupta, et al., 2006). This theory suggests that an individual who is involved with a certain environmental issue might have a higher level of consistency in their actions towards sustainable behavior. On the other hand, those who are less involved or not involved with an environmental issue at all will be more inconsistent with their behaviors toward sustainable action. Furthermore, according to the Oxford Handbook of Prosocial Behavior, data does show a consistent positive relationship between feelings of personal responsibility and pro-

environmental behavior but the first step toward action is highlighted as: awareness or knowledge of the environmental problem and its consequences (Shroeder, et al., 2015).

Determining the factors that influence environmentally conscious behaviors and the motivations that are likely to spark those actions provide important insights to those developing policies. Further, understanding the mindset of those who choose the more polluting activity can also determine the disciplines that might be more effective for a group who must place personal convenience at a higher priority over the impacts of climate change. Perhaps, it may be that these people wish to be more ecofriendly but find that alternative options are simply too out of reach or would otherwise increase their standard of living. This project discusses a small non- profit's current carbon neutral plan and assesses the effectiveness of each initiative as it seeks to mitigate a reduction in greenhouse gas emissions in the organization's following areas: natural gas, energy, business travel, waste, paper and commuting. Following is an evaluation of factors and themes, which promote or impede low carbon employee behaviors.

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Introduction

Climate change is a complex issue, a wicked problem that requires integrated, multi-disciplinary solutions. While science has modeled and proven the impacts of climate change, the impacts we see today have further demonstrated that science alone is not enough to convince people of changing their attitude toward climate change, nonetheless their behavior. Climate change is a complex issue, because it is caused by a complex species, humans. Research has not been able to define exactly what motivates humans to take certain actions; however, research has distinguished connections between intrinsic/extrinsic motivations and certain behaviors. This research project aims to better understand a small non-profits policy plan and how it impacts employee's likelihood of changed behavior toward organizational desired outcomes for lower carbon emissions. Convenience has become the motivator for the American people even at the cost of environmental impacts. There has been a lack of education of conscious consumerism, and instead industries have made a niche out of convenience. Today, we are experiencing the social and environmental impacts that have been building up from years of advertising products and services that have further enabled the market that drives instant gratification mindsets. The everyday decision to pursue the more polluting activity vs. the less polluting activity brings the premise of this research project. There are many factors to take into consideration: emotions, desires, needs, ability, accessibility, convenience, perception, etc. These are just a few variables that could potentially persuade or dissuade an individual to become influenced and to take action or inaction. However, the human mind is complex and is not only motivated by internal needs but external influences that have created a cognitive dissonance and have further supported

the notion that sustainable activities are an option and not a necessity. Similarly, living in a world where everything is marketed as a need, even at the expense of global health, makes it difficult for people to understand the impacts of their decisions. This research project will also help to find connections between the attitude-behavior gap that is associated with pro-environmental behaviors (PEB).

Organization Background

The nature of this project is in coordination with a small non-profit called Stand for Children. Stand for Children is an education advocacy organization whose mission is to improve public education. While education is their focus, Stand for Children also recognizes other important issues of public concern, namely, climate change. Stand for Children is currently headquartered out of Portland, Oregon but has also managed to make a greater impact through the implementation of nine affiliate offices spread across the United States indicated as follows: Arizona, Colorado, Illinois, Indiana, Louisiana, Oregon, Tennessee, Texas and Washington. While most affiliates have a home office, the national team is spread across various states, making it the team that yields the most greenhouse gas emissions due to travel. To expand on the importance of environmental sustainability within the organization, a team of environmental champions was established, with the mission of ECO-- "encouraging change in ourselves". The ECO Team or "green team" is responsible for raising awareness about climate justice and creating opportunities for action within the organization in hopes of reducing the organizations carbon footprint while inspiring other employees to do the same. To further their commitment to environmental sustainability, Stand has launched an initiative in 2019 to become a carbon neutral organization. Further, the ECO team was formed to

operationalize this goal. In doing so, the following goals were established: 1) Reduce air flight emissions by 50% by the end of FY 2020 *(without compromising on quality, service & support to affiliates),* 2) Reduce National commuting emissions by 20% by the end of FY 2020 and 3) Develop sustainability criteria for vendors, procurement & leases by the end of 2019 (stand.org, 2019). Stand for Children has chosen to undergo these changes within the national team only. While the national team is responsible for a large output of GHG's via air flight emissions, it is important to understand the entire scope of emissions committed by national and affiliate teams to accomplish a more robust policy that will influence sustainable change across the entire organization and its employees. Throughout this project, an analysis of 2018 vs. 2019 GHG emissions will be examined to understand the impact of goals and initiatives set in place to reduce the organizations carbon footprint. Additionally, an evaluation of behavioral interviews regarding these initiatives will help to further understand and evaluate my research question: Does the implementation of carbon neutral initiatives in the workplace promote pro-environmental behaviors in employees' daily work lives?

Objectives

This project will seek to understand how current incentives, alternatives, resources, and tools provided by the organization stimulate employee potential to carry on these behaviors in the workplace and the possibility of furthering these practices into individual lifestyle changes. It will be necessary to include data collection of 2018 and 2019 GHG emission results and an analysis of 2019 GHG emission results regarding: energy, business travel, commute, waste, and procurement to see the action potential of the carbon neutral policies set in place.

This research projects aims to discuss and explore the following:

- Debriefing the SWOT and discussing initiatives the carbon neutral plan consists of
- 2018 GHG emissions in comparison to 2019 GHG emissions results
- Discussion of carbon hotspots and plans to mitigate/offset
- Identify motivating factors that were found to contribute to employee behavior change
- Explore outcomes from interview data to match or contradict observations found in carbon footprint data
- Impact of initiatives in the workplace
- Recommendations based off behavioral interview analysis and theories of change

Bias Indicators

- Sample size
- Response Bias

Before Stand for Children decided to become a carbon neutral organization, greenhouse gas emissions were calculated via a third-party sustainability consulting company to establish the baseline. Additionally, a strategic planning analysis was conducted in the form of a SWOT evaluation. The areas of focus were strengths, weaknesses, opportunities, barriers, and keys to success. This type of analysis works to guide decision-making and is intended to reveal objectives of the project while specifying internal and external factors. However, while this strategic process serves as a great tool for internalizing project feasibility, it has its limitations in regard to point of view. In this

case, the green team was a part of developing the SWOT analysis, thus, it reflects bias and subjective data (status.net, 2020). This is an important factor to consider because traditionally, candidates who are hired to work for this organization value social justice and therefore, this ideology assumes that individuals who support social justice issues would also support the governance that environmental justice is important and ethical. The organization has 122 employees, however due to external circumstances authority to conduct interviews was limited to only a few staff, leaving a small sample size. For this reason, the sample is not representative of the general staff population. A second bias indicator is the group of people who volunteered to participate in this study because regardless of the sustainable practices set in place, these employees were individuals who expressed pro environmental ideologies and are already living eco-conscious lifestyles; therefore it is also not representative of the organization as a whole.

Introductory Section: Part 2- Hypothesis

By analyzing the organizations strategies in reducing their carbon footprint, via initiatives, incentives, communications and other motivating factors, I expect to either confirm or deny my hypothesis that employees are more likely to carry out green practices in the workplace if: the individual has a personal connection with nature (man-nature orientation), if the individual feels a sense of personal responsibility to the issue and if the individual has awareness/knowledge of the problem and its consequences. Other factors to consider are:

- Personal needs are being met (cost efficient, safe)
- It does not impact work performance
- It is convenient/accessible

Further expected findings consist of better understanding the driving force behind low carbon behaviors in the workplace and whether influences include employee's intrinsic motivations vs. workplace incentives.

SWOT analysis part I: Strengths

The analysis compiled information from in person meetings, individual interviews, and surveys. The data found was derived from a third-party consulting company hired by Stand for Children named Sustainable Business Consulting. The analysis provided rich information about the viability of implementing sustainable practices within the national team while also highlighting the same areas of focus (SWOT) to establish potential of rolling out the same practices to affiliate offices. The following categories were considered as part of the strength's assessment: employee engagement, office locations, commuting options, teleconferencing, paper, energy and waste.

Employee engagement

Employee engagement is defined as the nature of the relationship between an organization and its employees. Further, employee engagement strongly correlates with emotional commitment, enthusiasm, or dedication toward their job. In order to increase employee engagement in specific initiatives that encourage PEB, Stand for Children made it a point to implement sustainable practices that align with the organizations mission. Obtaining, developing, and sustaining employee engagement is key as it is essentially defined by three factors: thinking, feeling, and acting. The more emotionally invested the employee is in the organization, the more likely the employee is to engage and commit to whatever initiative is set in place. According to researcher and author,

Robert J. Vance, increasing employee engagement requires job enrichment such as meaningfulness, variety, autonomy, and co-worker support (Vance, 2006). He highlights that to enhance commitment, it is important to provide employees with opportunities for personal development whether that be through the following outlets: knowledge, skills, experience, or expertise. He goes on to explain that these opportunities lead to self-efficacy, self-esteem, and employer commitment (Vance, 2006).

To understand the level of employee engagement, sustainable practices were enforced with simple changes such as: turning off projectors after use. During the first few weeks, employees did not always remember to turn off the projectors after use, so additional awareness and reminders were given for the employees to fully adopt these practices. Moreover, once the employees understood the benefits toward transitioning to these practices, it was easy for behavior to change, per observational feedback. This example conveys that additionally knowledge and co-worker support who made signs to remind each other to follow through with the action, do prove to increase employee engagement. Further, after some time, it became a norm and signs were not needed anymore. For the subsequent strengths indicated: office locations, commuting, teleconferencing, paper, energy, and waste; ***incentives*** play a key role in influencing the motivations of employees.

Office locations

Locations are spread out through various states. Since the work at Stand for Children is collaborative in nature, the organization allows employees the opportunity to work remotely two days out of the week. This incentive allows individuals to reduce their commuting emissions output and gives them the flexibility to balance out other home/

life responsibilities. Robert J. Vance's research also states that flexible benefits also work to enhance commitment from employees and strengthens employee engagement. Additionally, the implementation of a public transportation incentive program provided by the organization works to provide additional support to staff members who would like to begin using public transportation over traditional methods of transport by getting reimbursed.

Communication

Communication across teams is vital to the success of the organization, for this reason, teleconferencing is made available for easy use via zoom and skype and is encouraged as much as possible. While teams are regionally dispersed, teleconferencing can be viewed, as both a strength and weakness because it can help to reduce flight emissions by having conversations online, on the other hand, there are often meetings that traditionally have been planned to be in person due to its importance or priority.

Reducing paper

Ultimately, going paperless can drive growth and innovation within the company as it moves forward into the digital era. Going digital reduces the need for printing and can also work to capture new audiences and provide faster/real-time communication. Another benefit would be more streamlined internal processes that can be easily transferrable. This can aid in more effective employee training and productivity. Moreover, it enables internal processes to become more useful and adaptable with the ability to scale as the business grows (ITpro.co.uk, 2010).

Energy and Waste

Strengths involving energy and waste include energy efficient technology such as light timers inside offices, purchasing more energy efficient technology and building off of staff's current sustainable practices such as home composting and bringing lunch to work.

SWOT Analysis part II: weaknesses, barriers, and corresponding opportunities

The organization is headquartered out of Portland, Oregon with eight other affiliate offices located in Arizona, Colorado, Illinois, Indiana, Louisiana, Tennessee, Texas, and Washington. Having the affiliates so regionally dispersed poses challenges in the realm of obtaining the most accurate data when it was time to calculate greenhouse gas emissions for each state affiliate, respectively. It had also been established that piloting the green policies with the national team first would help to build out the plan as it matured into implementation in other states for the future. While the national team is headquartered out of Portland, there are national employees that work remotely out of different states and work from home. The analysis demonstrated a "national vs. state" mindset; this ideology was derived by previous responses that indicated a disconnect between national and state employees when other national team initiatives were mandated. The challenge of promoting something new from "the top- down" exposes the need to provide workplace champions in each affiliate office to support, guide, communicate and liaison new changes as they are being established in latter phases. Equally, important is the acknowledgment that the incentives that are intended to motivate behavior for people who work in office would not always be applicable to those who only work from home. The challenge of promoting equal incentives across national

and state employees— exposes an area for opportunity to develop parallel incentives that are relevant to those who work in office and those who do not. Developing an equal opportunity for engagement that is parallel across employees who work from home and those who work in office could reinforce that every person is significant and that their involvement does play a vital role in reducing overall GHG emissions, thus having the potential to close the national vs. state mindset divide. Similarly, green champions can also reduce any inconsistencies regarding sustainable implementation to reduce any miscommunications. External barriers that were found include limited action potential due to leased facilities and limited control of what landlords permit, lack of optional recycling and inability to limit paper use when it is the only means of carrying out the work SFC does to reach the communities it serves (i.e. low-income communities who can't receive digital communications, have no transport and little to no access to technology).

Organization's current Initiatives Roadmap

The ECO team's objective was to become a carbon neutral organization without compromising the mission or quality of the work that Stand for Children (SFC) accomplishes in regard to the work the organization focuses on which is to improve public education. An implementation plan was developed by the ECO Team to serve as a guide, provided are highlights:

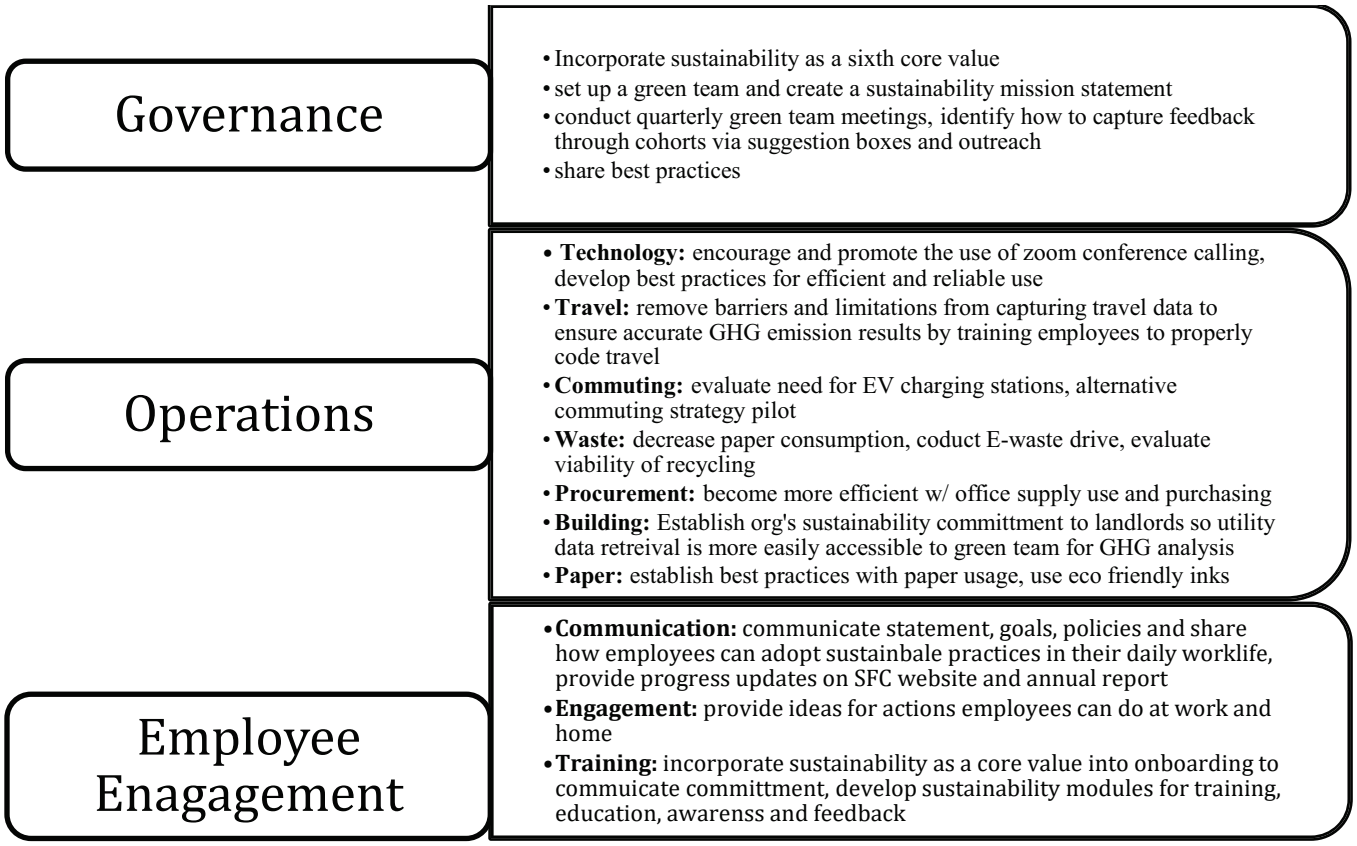


Figure 1. A summary of plans from Stand for Children's Initiatives Roadmap

2018 GHG Emissions Discussion

The 2018 report for greenhouse gas emissions is considered the baseline. Based off those results, the number one carbon hotspot came from travel, specifically, air flight emissions. The carbon footprint analysis included energy (natural gas and electricity), Business travel that involves air, taxi, shuttle and reimbursed miles, individual commuting, waste, recycling, composting and paper consumption. Data was prepared by Sustainable Business Consulting, a third-party agency hired by Stand for Children to calculate their 2018 carbon footprint; results were shared May 2019.

Business Travel

Business travel demonstrated to be the number one carbon hotspot due to the number of trips taken collectively, most of them being medium-haul flights. Short haul flights are considered to last anywhere between 30 minutes to 3 hours, while medium haul flights last between 3-6 hours. The amount of distance a trip takes is important to acknowledge because there is a relationship between distance flown and emissions output. A disproportionately large amount of fuel is spent during takeoff, thus resulting in higher emissions per km flown during a short flight, rendering it the most inefficient type of flight. This makes longer flights that cover more distance much more efficient than that of short haul flights. However, as distance flown increases greater than 3,100 miles or 5,000 km, a plane's efficiency tends to decrease due to the fuel mass required to travel longer distances (Jardine, 2009). Medium haul flights in this case are considered to be the most efficient, however, in order to meet the initial goal of cutting flights emissions by 50%, the organization focused on developing a criteria for what is considered an essential flight to ensure emissions reductions for 2019.

Commuting

Commuting data was obtained through a commuter survey developed by the consulting company, it was sent out to all employees on behalf of the ECO Team. Arizona had great potential to reduce emissions from commuting to work since it demonstrated the highest average miles driven on-way of 23.6 compared to the average of 16 miles. However, the office is in the heart of Phoenix, the busiest and most heavily populated city in Arizona. Employees who work outside of the city sit in traffic for at least 40 minutes to an hour, both to and from work. Beyond this, a few other reasons

indicated by employees choosing to commute alone vs alternative forms of transport include: the employees' role, responsibilities outside work (ex: picking up kids from school, etc), and distance from home to work. These are just three reasons employees indicated they are not able to ride on public transportation or use an alternative method. The majority of state affiliates work is also comprised of grassroots initiatives, making the presence of the employees critical to the success of their work. Further, organizers work in multiple schools, making it essential for them to drive their own car. Therefore, if organizers wanted to partake in alternative methods of transportation, work performance, efficiency and convenience may be risked at the expense of being more environmentally conscious.

Energy

For energy consumption, only complete data from Phoenix and Boston were able to be collected. Partial/ cost data was used to calculate Baton Rouge, Indianapolis and Denver. No data was provided for Memphis, Portland, Chicago, Seattle and Washington. However, estimations were made based on average consumption of all the other organization locations.

Procurement

Between all the affiliates, almost 500 reams of paper were consumed without being recycled. Paper consumption was another area of opportunity to reduce in the organizations carbon footprint because in 2018 many of the affiliate offices did not have a recycling program or were not following recycling protocol. As shown, 92% of total reams accounted for un-recycled paper, in other terms, this equaled out to 249,000 sheets of paper gone to waste.

Waste

Waste was another opportunity area, as recycling had not been enforced. According to the SWOT analysis, some locations do not have recycling available, making it difficult to implement. Since many of the offices do not recycle or monitor waste, most locations were given extrapolated values.

Methods Part I: Calculating 2019 Carbon Footprint

- **Subjects:** Data obtained from utility bill statements, SFC staff, office managers, property managers and vendors

  -Natural Gas

  - Energy

  -Business Travel

  -Waste

  -Paper

  -Commuting

- **Equipment**

  -GHG analysis toolkit provided by Sustainable Business Consulting

- **Interventions**

Each subject has its own intervention. Some information was not able to be collected because of landlord refusal; in this case, estimates were used to account for missing or unavailable data.

This formula was used to calculate emissions:

Activity data X Emission factor = Metric tons of C

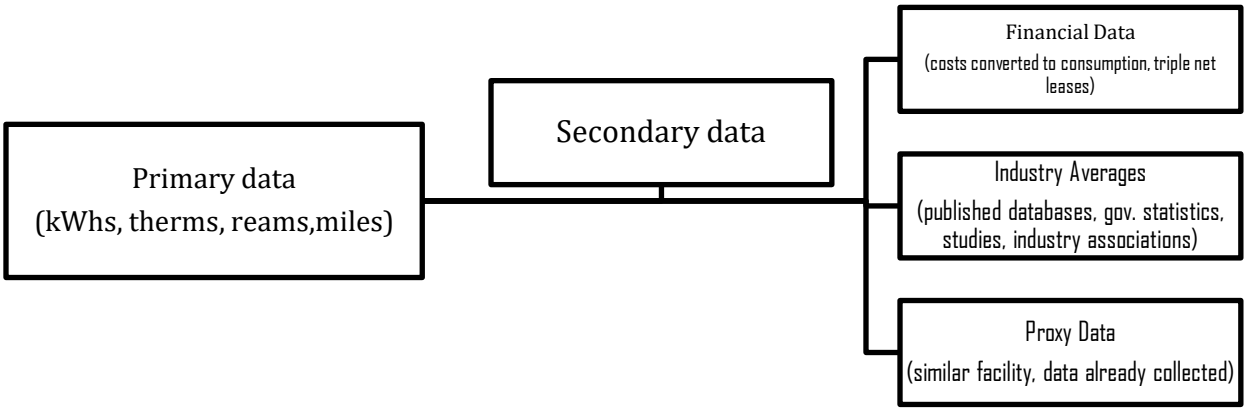


Table 1: Methodology for GHG data collection

It was important to gather pertinent information from the finance team and state operating coordinators (office managers) to gather data more efficiently. Information was needed for:

-Square footage of each affiliate office

-A list of all employees

-A list of which employees work from home and those who work remotely

-The number of months each office is leased by each affiliate.

Method types for Natural Gas, Electricity, Paper, Waste and Recycling

Natural Gas

Natural gas calculations:

Therms per square footage X office square footage = monthly therms

- Collected for individual affiliate offices

- Primary data is monthly NG usage (therms) and cost per month, as stated on the bill
- If Primary data isn't available, secondary data is pro-rated from the entire building's usage (getting therms for the entire building and factoring the percentage of Stand's square footage in the building).
- If no data is provided, average local usage for similar office size was used to make an estimate. Most of the offices don't use Natural Gas.

Electricity

Electricity calculations:

kWh per square footage X office square footage = monthly kWh

- Collected for individual affiliate offices
- Primary data is monthly electricity usage (kWh) and cost per month, as stated on the bill
- If Primary data isn't available, secondary data is pro-rated from the entire building's usage (getting kWh for the entire building and factoring the percentage of Stand's square footage in the building).
- If no data is provided, average local usage for similar office size was used to make an estimate

Business Travel

- Looked at expense reports to find all travel related expenses and categorized them into air travel, car rental, rideshare, train, ferry, and mileage reimbursement.

- For air travel it was important to determine departing and arriving airports to find air miles, indicate type of trip (one-way or round trip), distance between airports
- Organize flights by haul type (short, medium, long)
- For train and ferry, departing and arriving airports to find miles that were used
- Car rental and rideshare used average costs to determine miles
- Mileage reimbursement used cost of travel to determine miles traveled

Waste, Recycling, and Composting

Waste and recycling calculations:

Pounds per week X the number of employees = monthly lbs

- Collected for individual affiliate offices
- Primary data is monthly consumption (weight) and cost per month, as stated on the bill
- If Primary data is not available, secondary data is the monthly cost for waste, recycling, and/or composting management.
- If no data is provided, average local usage for similar office size was used to make an estimate

Paper

Used vendor invoices

- Counted orders of copy paper and % of recycled content

Commuting

- Developed a commuter survey using Survey Monkey, sent survey to employees through operations and export results.
- Used GHG toolkit provided by consulting agency to input mileage from car rental, taxi/rideshare, and employee mileage that gets reimbursed. Annual mileage averages were used for states who use EV's.

Methods Part II: Survey and Interview

One survey was conducted from which quantitative and qualitative data was collected. This survey was sent out to all employees as "The Commuter Survey". It had two parts, part I asked specific questions regarding commuting habits and part II asked questions regarding thoughts and opinions about the policy implementation. An interview was also developed to further evaluate employees' thoughts and knowledge on climate change and the organization's low carbon policy. The survey was created using survey monkey online program. Data results were exported using the survey monkey website analyzing tools.

Limitations

There were various limitations and barriers to collecting data accurately. The main reason being that a lot of the information needed to begin data collection depended on landlord's willingness to cooperate. Method 3 had to be used for a lot of the data calculations which meant that is was not the most accurate and resulted in estimations based off industry averages. Method 3 as described in the methods section describes each process taken depending on information obtained.

- Natural Gas, Electricity, Waste, Recycling and Composting
    - Challenges are that utility bills are often rolled up into the regular monthly payment so actual usage is not seen; landlords are unwilling to share the information because they have expressed the worry that lessors would try to get them to change their practices.

- Business Travel
    - Challenges include the complexity of our expense management system and inaccuracy of expense information. Employees have been trained to code, but a lot of travel-coded items had to be filtered out to find true travel data.

Results

Natural Gas

Table 2: 2019 Natural Gas emissions results

2019	kWHs/therms
Baton Rouge, LA	**408**
Indianapolis, IN	**475**
Seattle, WA	**471**
TOTAL	**1,354**

Summary: Only three of the state affiliates use NG, however, Method 3 was used for data collection. Method 3 for the NG calculation meant using square footage and then using

the average energy consumption of commercial buildings in the U.S. In this case, .268 therms per SF per year was used for the three state affiliates that did use natural gas. This totaled to 1,354 therms between the three states, Louisiana, Indianapolis, and Washington collectively. Natural gas consumption in 2018 was 1% and stayed to 1% in 2019. Natural gas is not an area of much concern given that most states do not use it.

Energy 2019

Table 3: 2019 Energy emissions results

Location	2018 KWhs/sf	2019 KWhs/sf
Phoenix, AZ	11.0	10.76
Baton Rouge, LA	7.4	6.78
Boston, MA	5.2	1.58
Memphis, TN	0.1	0.88
Indianapolis, IN	5.9	8.77
Portland, OR	9.8	8.77
Chicago, IL	9.8	8.77
Seattle, WA	9.8	6.57
Denver, CO	14.6	8.77
Average US Office for 2018	17.3	17.3

Summary: Method 3 was used for the following states: Colorado, Chicago, Indianapolis, Boston, Oregon, Tennessee, and Washington. However, Arizona and Louisiana were the

only state affiliates where Method 1 was used to calculate emissions, and both did show a decrease in energy use.

Table 4: 2018 Business Travel-Air flights Results

2018 Air Flights by Category			
Flight Category	**Miles**	**MTCO2e**	**%**
Short (<300 miles)	29,705	7	3%
Medium (>= 300 miles, <2300 miles)	1,370,702	188	88%
Long (>= 2300 miles)	113,227	19	9%
Total	**1,513,634**	**214**	**100%**

Table 5: 2019 Business Travel- Air Flights Results

2019 Air Flights by Category			
Flight Category	**Miles**	**MTCO2e**	**%**
Short (<300 miles)	9,471	2	1%
Medium (>= 300 miles, <2300 miles)	577,420	79	74%
Long (>= 2300 miles)	190,961	32	25%
Total	**777,852**	**113**	**100%**

Summary:

In 2018, the organization had the most medium haul flights; these are considered to be the most efficient and were reduced by 14% from 2018 to 2019. Another improvement was short haul flights, which decreased by 2%. However, long haul flights increased by 16% from the last year. Total air miles were almost cut in half

and resulted in a decrease of 735,782 miles. Further, total metric tons of CO2 decreased by 101 MTCO2e.

Table 6: 2019 Flights by Haul Category

Facility	Short haul	Medium haul	Long haul
Home offices	2237	92681	45989
Louisiana	130	23755	21329
Oregon	1963	292866	45989

Individuals who work remotely, took the most amount of flights for each category, second came Louisiana and Oregon came third.

Table 7: 2019 Waste Results

2019 Waste Results: 40.7 MT CO2e, 10%

	2018 Tons	2019 Tons
Waste	**42.6**	**96.8**
Recycling	**8.1**	**13**
Composting	**0**	**0**

Table 8: 2019 Waste Results by Affiliate Office

Facility	Sq ft	# Of employees	Months Used	Method	Totals
AZ-Phoenix	1850	6	12	Method 3	1860.48
CO-Denver	2826	8	12	Method 3	2480.64
IL-Chicago	2256	6	12	Method 3	1860.48
IN-Indianapolis	1772	11	12	Method 3	3410.88
LA-Baton Rouge	1523	10	12	Method 1	3359.2
MA-Boston	1100	6	8	Method 3	1240.32
OR-Portland	5765	37	12	Method 3	11472.96

TN-Memphis	1769	4	12	Method 3	1240.32
WA-Seattle 1	1757	7	5	Method 3	904.4
WA-Seattle 2	1000	7	7	Method 3	1266.16
Home Offices	2500	25	12	Method 3	7752
Totals	**24118**	**120**			**36847.84**

Summary: Method 1 was only used for the Louisiana affiliate, Louisiana reported 95 gallons of trash per week, which equaled to 63.65 pounds per week. All other state affiliates used Method 3, per employee estimates based on Louisiana, which turned out to be 29.07 pounds per person per month. Per 2018 Co2 results, waste consumption increased from 3% to 10% in 2019 totaling to 96.8 tons.

Table 9: 2019 Paper Results

Facility	0% recycled paper	30% recycled paper	70% recycled paper	100% recycled paper
AZ	48,100 sheets			
CO	5,000 sheets	500 sheets		
IL	10,000 sheets			
IN	38,400 sheets	500 sheets		
LA	10,000 sheets			
MA		250 sheets		
OR	19,400 sheets	740 sheets	500 sheets	25,000 sheets
TN				
WA				

Table 10: 2019 Paper Results

Paper 2019	Reams	% Total
0% recycled	261.8	83%
30% recycled	4.0	0.01%
50% recycled	1.0	0.003%
100% recycled	50	16%
TOTAL	316.8	~100%

Summary: In 2018, 92% of paper was not recycled at all, whereas in 2019, that total decreased by 9%. Arizona, Denver, Illinois, Indiana, Louisiana and Portland are the main consumers for this category because of the employee roles it holds. Most organizers work out of those states and it requires a lot of printing of materials on a day-to-day basis. However, the paper category remained the same at 1% for total GHG inventory for the year of 2019.

Table 11: 2019 Commuter Survey Results

	% of Respondents in 2018	% of Respondents in 2019
Drove alone everyday	32%	39%
Telecommute at least one day	6%	18%
Carpool at least one day	5%	15%
Bus at least two days	4%	6%
% who travel alternatively (carpool, walk, bus, metro/train) everyday	49%	17%
% who telecommute	14%	14%
% who walk at least one day	5%	9%
% who bike part of the way at least one day	1%	12%

Table 12: 2019 Commuter Survey results

Percentage of respondent's method of transportation in a typical work month "everyday"	% of Respondents
Response rate: 89/96	
Drove a car	39%
Took public transportation	9%
Carpooled	3%
Biked	0%
Walked	5%
Taxi/Uber/Lyft	0%

Figure 2: 2019 GHG Emissions Results

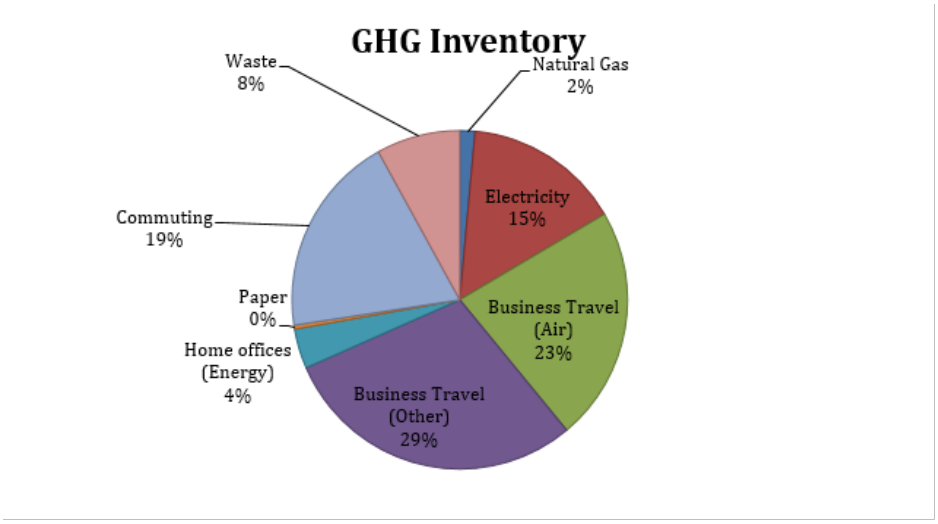


Table 13: 2018-2019 GHG Emissions Results by category comparison

GHG RESULTS	MT CO2e 2018	MT CO2e 2019	% of total 2018	% of total 2019

Natural gas	5	7	1%	1%
Electricity	82	76	15%	15%
Business Travel (air)	214	113	39%	22%
Business Travel (other)	73	130	13%	29%
Home offices	25	12	5%	4%
Paper	3	2	1%	0%
Commuting	123	175	23%	19%
Waste	18	41	3%	8%
TOTAL	**543**	**505**	**100%**	**100%**
MTCO2e/ employee	**4.5**	**4.1**		

Summary:

2018 GHG total amount was 543 MT CO2e, whereas in 2019 GHG total amount was 505 MT CO2e. The two main carbon hotpots for both 2018 and 2019 stayed the same: business travel and commuting. However, air travel and commuting decreased while other business travel increased, this could be attributed to the reduction in air flights and more local transport.

Discussion

Out of all the factors that contribute to climate change, the one that this research project focuses on is the attitude behavior gap toward pro environmental behaviors. Behavior plays a vital role in the response to climate change because it drives decision-making. Each course that is offered through the energy policy and climate program has reinforced that climate change is attributed to human activity and in order to obtain "buy-in" that people do play a role in the increase of greenhouse gas concentrations, there needs to be a shift in public attitudes and behaviors. Therefore, this project sought to understand the behavioral motivations behind the individuals who prioritize the environment by analyzing the relationship between sustainable initiatives in the workplace and low carbon behavior. Based on the GHG analysis results and survey data the research question: **Does the implementation of carbon neutral initiatives in the workplace promote pro-environmental behaviors in employees' daily lives?** Has no definitive answer, but for this study, the green initiatives set in place have sent a significant enough message for most employees to take action in some way or form, based off the commuter survey, there was a 12% increase in those who chose to telecommute from 2018 to 2019, a 10% increase for those who chose to carpool at least one day out of the week, a 2% increase in those who chose to use the bus at least 2 days out of the week and a 4% increase of those who chose to walk at least one day out of the week. While commuting habits are often the most difficult to change, there was a positive increase toward alternative forms of transport and 52% of respondents attributed these changes to the organizations work in helping them become more aware of climate change. As described in the *Oxford Handbook of prosocial Behavior* by David A.

Shroeder and William G. Graziano, the likelihood of employees to adopt PEB can be predicted by their "connectedness with nature". The publication suggests "pro-environmental behavior has a biospheric motivational basis" (Shroeder, et al., 2015). To this end, various employees expressed a love for nature before the green initiatives were set in place in their survey and interview responses. In congruence, empirical literature also indicates a consistent relationship between individuals who perceive environmental problems as an urgent issue. Almost all employees answered that they believed climate change is important and urgent and expressed gratitude for having the opportunity to become more involved in the organization's sustainability plan. The greenhouse gas emissions indicated that the two carbon hotspots for the organization: business travel and commuting have remained. However, it has been reported in research that transport changes are the hardest to make due to significant changes that would need to occur in employees' daily routines. Conversely, the telecommuting policy does prove to incentivize people to reduce their carbon footprint by choosing to telecommute vs. travel as mentioned in various survey responses. This was further confirmed with 50% of employees expressing that public transportation is inconvenient or not easily accessible, 35% expressing that they cannot carpool due to personal obligations (eg. dropping kids off at school), 5% stating they like their alone time and 33% stating a variety of responses relating to work inefficiency.

While other initiatives have been set in place, many affiliate employees mentioned they were not quite sure what they were. Knowing how to solve environmental problems and increasing knowledge through trainings or workshops has been proven to increase employer reciprocity and can lead to more voluntary

performance as described in key lessons by organizational development researcher, Robert J. Vance (Vance, 2006). Employees expressing their need of best practices provides an opportunity for green champions to provide clarity on concrete sustainable best practices with employees and creating sustainable knowledge and competence (Polman, 2020). The opportunity to educate more employees on the carbon neutral plan was further confirmed when asking employees where they attributed climate change awareness. Between work, social media, news, politics, friends, family, school and church, only 20% of respondents stated their climate change awareness came from work. Almost 87% stated awareness is attributed to news outlets.

Testing the hypothesis:

The commuter survey and individual interviews asked various questions regarding employee's level of engagement in PEB's. In order to measure these attitudes or opinions, a similar approach to that of the Likert scale was used to test my hypothesis. Based off survey questions that specifically asked about the likelihood of partaking in sustainable alternatives, I used individual sentiment to match a variety of personal motivations most indicated through the survey responses. A point was given to every sentiment that mentioned one or more of the following

Table 14: Hypothesis Likert Scale

Motivation	Frequency of mentions
As long as personal needs are met (not having to compromise outside obligations/responsibilities)	12
As long as it doesn't interfere with work performance	15
As long as it is convenient/accessible	26

As long as it is more cost efficient	4
Incentive/REWARD	8
Man-nature orientation	15

The results imply that individuals are most motivated by the other factors in comparison to incentives/ rewards. However, it is important to consider the actual incentives in place, there are not many currently. For example: working from home could be considered an incentive because it allows employees to work in the comfort of their home. It can also provide a sense of convenience and might also allow people to meet personal needs all while being the most cost-efficient and environmentally friendly option. However, based off survey responses, many employees mentioned the inability to work from home due to the nature of their job or were not sure if WFH was a policy set in place for all employees. If the WFH policy was being practiced by all employees, perhaps the incentive motivator would be greater than all other factors because it would potentially satisfy all other needs. Thus, it would be beneficial to provide more incentives to weigh out other available options. Man-nature orientation did come in tied as second place for next highest motivator in line. This suggests that employees who do have an emotional connection with nature are more likely to pursue PEB. Connectedness to nature can be increased by spending more time in nature (Shultz, et al,. 2007) therefore, developing challenges or team building activities around nature settings might produce increase levels of employee PEB's and engagement.

Natural Gas:

- **Initiative/ Goal:** Based off the sustainability implementation roadmap, the organization had the goal of having frank conversations with landlords about Stand's interests and desire to get primary utility data.
- **Employee action potential based off interviews:** Action potential was limited. Indianapolis, Baton Rouge and Seattle are the only affiliates that use NG. All three were based off extrapolated values.

Energy:

- **Initiative/ Goal:** Automate sustainability at offices (ex. motion sensing lights, timers, etc.)
- **Employee action potential based off interviews:** Interviewees on the national team stated there was consciousness around energy savings, whilst interviewees on the affiliate teams had a mixture of responses. One interviewee stated some green practices they did in office were to use natural light vs. turning on the office lights and turning off the A/C when no one was in office. Others stated they did not work differently after learning about the organizations green initiatives because they were not sure what initiatives were in place or what they could do on an individual level.

Business Travel:

- **Initiative/ Goal:** Reduce air flight emissions by 50% by the end of FY 2020 (without compromising on quality, service & support to affiliates). Identifying essential from non-essential travel.
- **Employee action potential based off survey and interviews:** Based off interviews gathered, national employees who participated had a good grasp on the

environmental impact of air flight travel. Many of them had made conscious efforts to reduce traveling to meet initiative goals. State affiliate employees expressed they did not take the emissions reductions goals into consideration but in part because their travel is mostly commuting by car vs. taking flights. State affiliate interviewees also mentioned that traveling by car is essential to their job because of the nature of their work that requires presence in multiple schools throughout the week but plan to telecommute after obtaining approval from management.

Waste:

- **Initiative/ Goal:** Conduct a waste audit to analyze what is being thrown out, size of bins and frequency of pickups and identify opportunities to decrease paper consumption.

- **Employee action potential based off interviews:** Based off feedback from interviews, there were several mentions that stated employees wish there was a recycling program so that they could try to reduce their carbon footprint in this manner. Per the organizations goal roadmap, a waste audit was to be conducted to monitor waste, however, it was established that this could not be accomplished due to landlord's lack of cooperation.

Paper:

- **Initiative/ Goal:** Set up double-sided printing as the default on all computers, create paper task force to highlight areas where paper could be reduced/eliminated and research the use of soy-based inks for in-house printing.

- **Employee action potential based off interviews:** Double sided printing is being encouraged and many interviewees stated that they do this for the sole reason of reducing paper waste and using resources more efficiently. Some interviewees stated that they do take waste home to recycle and compost.

Commuting:

- **Initiative/ Goal:** Transit benefit enrollment for staff to get reimbursed for transit passes and a flexible work from home policy.

- **Employee action potential based off survey and interviews:**

  Themes impeding people from considering low carbon transport:

  - Lack of carpooling opportunities
  - Family and home life obligations
  - Work inefficiency that would come from transporting in anything other than their own car
  - Geographical barriers (lack of or no accessibility, weather conditions, safety)
  - Cost
  - Lack of convenience
  - Perceived inconsistencies between national and affiliate offices on the work from home policy

Themes that would or currently do motivate employees to use an alternative method of transport:

- Adding work showers/ lockers to change after riding a bike, walking, or scooting
- Added commute time to get to work

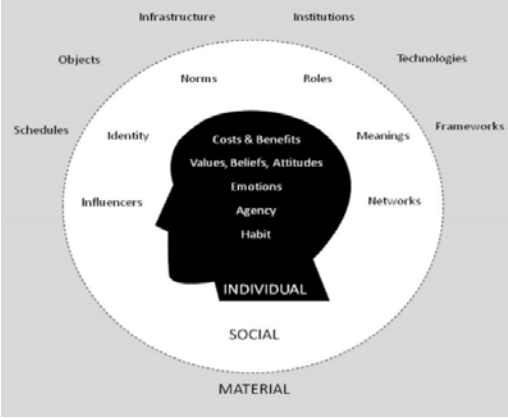
- WFH policy and allowing more flexibility to WFH
- Financial incentives for biking, walking or travel services

Theoretical Frameworks

There are two frameworks that can explain PEB, that are reviewed in this study. The "ISM" model that includes individual, social and material factors, and the behavioral change model.

1. **The "ISM" model**

Figure 3: The Individual, Social and Material model developed for the Scottish Government to assist in the prediction and shaping of behaviors relevant to sustainable development goals.



Definitions

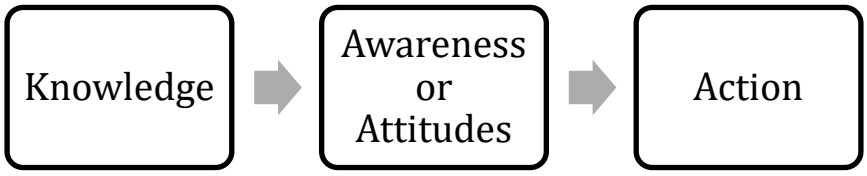
Individual- Includes the factors that affect the choices and behaviors an individual makes. These factors can be defined as values, attitudes, skills, or calculations made before acting. This also includes personal evaluation of costs and benefits (gov.scot, 2013).

Social- Includes influences beyond the social realm but that work to shape behaviors. These include social norms, people's networks and relationships (gov.scot, 2013).

Material- Includes factors that can either shape or constrain behaviors. These can be known as regulations or 'hard' infrastructures or 'softer' influences such as time and everyday schedules (gov.scot, 2013).

2. **The Behavioral Change Model**

Figure 4: The Behavioral Change Model



The basis of the behavioral change model based off Prochaska and DiClemente's transtheoretical model, is used among various psychological theoretical frameworks. As simple as this linear model is, it does not cover all other variables in the decision-making process of an actor. This model implies that the more knowledge a person has on a certain issue, the more awareness it brings which could then change the individual's attitudes that could ultimately lead to action. However, the decision-making process is not always this simple and often has many other influences other than the education itself. This model alone, it not enough to predict the level of employee engagement, but it does build upon the ISM framework that predicts other driving forces of pro environmental behaviors.

Recommendations

Using the "ISM" contexts, recommended actions would include clear and consistent messaging about the benefits of green practices in employees everyday work life. Providing those best practices would help to engage those who do not know where to begin and would call to the **individual** context. For the **social** context, building upon "social norms" such as creating signs around the office for simple best practices such as using natural light vs. artificial light, remembering to turn off monitors, and turning off the A/C when being away from the office for long periods of time. Social factors tend to influence more effectively than any other factor and are often observed to predict behaviors such as composting and recycling, opting for solar panels, and choosing ecofriendly transportation (White, et al., 2019). For the **material** context, communicating with landlords about the organization's commitment toward becoming carbon neutral and the importance of landlord` support to efficiently collect utility bills for data collection will be key toward reaching the goal of accuracy. Further, actual data vs extrapolated values will eliminate averages and establish a more accurate analysis of GHG emissions.

Conclusion

Businesses big and small are the backbone of the United States economy. More importantly, the way they operate can make an impact on employee's views, practices, and decisions while simultaneously co-benefitting reduced operational costs and reducing their carbon footprint to make a positive impact on the environment. There are many benefits toward going green in the workplace but does going green in the workplace translate to environmental consciousness? Understanding the connection between low

carbon workplace initiatives and how it may impact behavior inside and potentially outside of the workplace can help to better understand individual behavior change as it relates to anthropogenic emissions. While there isn't always a linear connection between an individual's attitudes and their actions, workplace policy and culture can help to shape positive attitudes and values toward desired outcomes, in this case, more sustainable practices. This multi-method approach sought to find what factors drive motivation and what the likelihood of behavior change would be based off those certain initiatives to promote pro-environmental behaviors in the workplace and how that could translate into decisions that would either increase or decrease the carbon footprint of the organization.

Research has demonstrated three factors to the success of low carbon initiatives in the workplace: "senior management commitment and leadership, giving staff ongoing feedback about the performance and impact of initiatives and gaining individual support from workplace champions or informal ambassadors to drive change" (Higgins, Cox et al., 2012). Even though these factors are a great place to start, importantly is the understanding of psychological determinants. Though various frameworks have been developed throughout the years, one that has been used in vast amounts of behavioral research is the Transtheoretical model of Behavior change developed by DiClemente and Prochaska. This model describes several stages to behavior change beginning with pre-contemplation. This step is defined as the stage where the individual is unaware of the problem. Contemplation is the stage where the individual is aware of the problem and of the desired behavior change. Preparation is the stage in which the individual intends to act. Action is the stage in which the individual

practices the desired action and maintenance is the stage in which the individual works to sustain the behavior change (Buckles, 2018). Based off the survey and interview responses, all employees expressed desire to change their behaviors for the purpose of reducing emissions. Many of the employees on the national team have demonstrated signs of being in the preparation and action stages, while those on the affiliate teams show signs of being in the contemplation and preparation stages. This seems to be a direct result of piloting the program to the national team first.

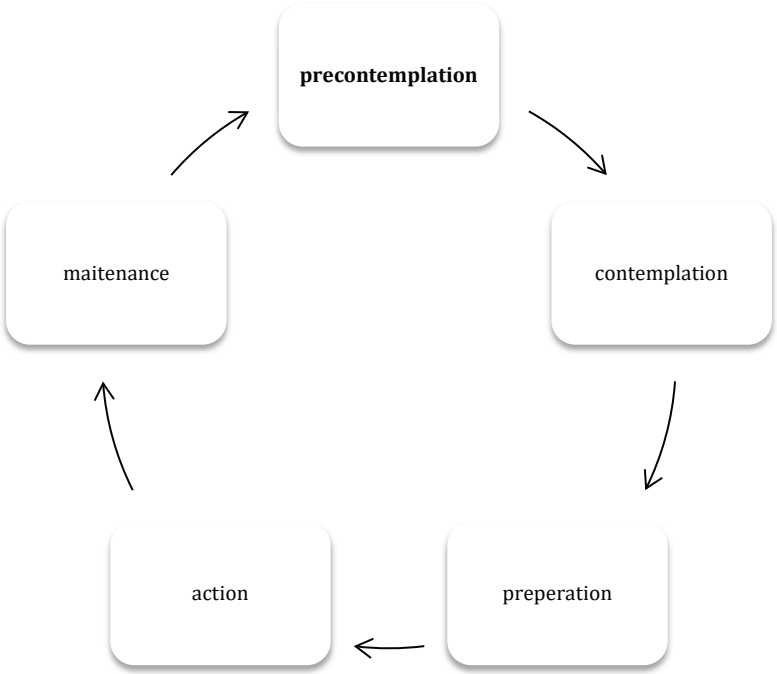


Figure 5: The Transtheoretical Model (also called the Stages of Change Model), developed by Prochaska and DiClemente

If the goal is to eventually carry out the same initiatives to the rest of the affiliate teams, proposed recommendations toward moving more employees from contemplation down the cycle of behavior change would be to: Designate "green" team members in each affiliate office to begin active planning. Since there is already positive momentum around

reducing emissions, acting on employee's voluntary willingness to change can make an easier transition into preparation. Going into the next stage, preparation allows for the development of new ways for employees to get involved, for instance: taking ideas from the survey and trying them out. A few proposed ideas were described as: clarifying the telecommuting policy and allowing all employees the flexibility to WFH, prioritizing office locations near transit hubs, subsidizing public transit costs/paying for public transit tickets vs. the transportation savings account and adding showers/ lockers to offices. Implementing employees' ideas might spark more motivation as it has the potential to make the plan feel more collaborative rather than "top-to-bottom" and could help to eliminate the national vs. state mindset. Employee engagement strategy experts state giving the employees the opportunity to help develop sustainability initiatives is a top recommendation (Polman, 2016). Conversely, developing a more robust agenda for how to maintain the change is equally important. Taking the time to refer back to the last agenda to assess what goals have been achieved and allowing for improvements based off employee feedback would help to better streamline goals/initiatives by state. Preparation is key to the next stage of the transtheoretical model because it can either motivate or dissuade an employee from moving on to the action stage. Workshops to help employees gain a sense of self-sufficiency and understanding can also greatly impact the preparation stage. Making sustainability a regular part of employee experience can help employees apply what they learn in their daily work lives. Sustainability knowledge and competence via workshops, trainings or "lunch and learns" reinforces Robert J. Vance's research that increasing knowledge builds, self-efficacy, and employer commitment. Further, it follows the behavioral change model of helping employees "become aware of the problem".

While some employees are already in the action stage, it is critical to gain feedback and insights on how employees are feeling during the action stage to try and mitigate anything that might be impeding the employee from continuing the change that has been made. Developing challenges can help to bring those who have been in action with those who have not been. In turn, it can create a cultural shift for all employees as they share a new experience. Most employees did express an interest in making changes to work more sustainably. While the GHG analysis included all of the organization's affiliate offices consumption, the green initiatives were intended only for the national employees as a pilot program. Feedback from national employee interviewees did indicate a good understanding of the organization's goals, carbon hotspots and practices that would lead or have led to PEB. Various interviewees also stated a conscious effort was made to decipher essential from non-essential travel. Other interviewee's expressed gratitude for having the opportunity to work for an organization that is taking active measures to reduce GHG's for the health of the environment. Implementing low carbon policy might not guarantee low carbon behavior but with co-worker support, educational resources and long-term incentives, a cultural shift may develop and ultimately encourage employees to shape a more educated and conscious responses toward reducing their carbon footprint. This study does not establish concrete predictors that would lead to PEB. Further, comparable research has also indicated findings of non-correlating behaviors to actions which cannot be discovered through predictors alone. Much research is yet to be done to try and understand why attitudes and behaviors don't match, for instance: those who fight for climate change but do not change anything in their lives to make an impact, is a question that has yet to be answered. Despite the disconnect, many studies have found a

deeper and more positive correlation with those who have connectedness to nature. Thus, developing trainings about how nature is impacted or in nature, may spark a deeper connection and motivation for those who care about the issue but do not yet have a deep sense of connectedness with mother earth.

Often employers use extrinsic motivations for a desired action or outcome from the employee, however, extrinsic motivations are influences that would not naturally come from the person innately. Since every individual has their own set of internal motivations, it is difficult to develop incentives that would call to a group rather than one person individually. There are many theories that explain pro-environmental behaviors and actions. In a previous case study titled: Pro-environmental Behaviours in the workplace: Driving social change, success was found when companies used positive reinforcement techniques rather than mandatory policies. Consequently, it was found that voluntary participation by the employees empowered them to develop new initiatives on their own. It was also reported that peer-to-peer learning of pro-environmental behaviors in the workplace encouraged other employees to develop a continuity of sustainable ideas and practices into their daily lives (Loverock, 2012). This study does confirm that many employees do have a desire to consciously minimize environmental impacts, thus calling to an intrinsically motivated approach supported by man-nature orientation, incentivization, knowledge and convenience.

Acknowledgements

I wish to acknowledge various people for their contribution to this project. Firstly, I would like to express my sincere appreciation to my mentor, Shannon Campion for helping me develop the idea for this project, for your willingness to accept the role as my

mentor, for providing constructive suggestions and for your understanding during the development of this project. Next, I would like to thank Jefferson for your unwavering support, encouragement, and assistance in the data collection of this project. I learned so much from you, thank you for offering so much of your time and guidance. I would also like to extend my gratitude to the ECO team for being available whenever I needed extra help or feedback. A thank you to Dr. Schwebel and Dr. Zachary, my research supervisors for your support and valuable suggestions during the planning of this research study. Finally, a special thank you to Stand for Children for allowing me to survey and interview the employees and supporting my educational endeavors.

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